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FEBRUARY 1971

AN EXPERIMENTAL EVALUATION OF AN AUDIO TAPE LEARNING PROGRAM FOR SHIPBOARD DAMAGE CONTROL CENTRAL SOUND POWERED TELEPHONE TALKER PROCEDURES

John F. Brock
Richard E. McCutcheon, Jr.

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AN EXPERIMENTAL EVALUATION OF AN AUDIO TAPE LEARNING PROGRAM FOR SHIPBOARD DAMAGE CONTROL CENTRAL SOUND POWERED TELEPHONE TALKER PROCEDURES

by

John F. Brock
Richard E. McCutcheon, Jr.

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Submitted by

Edward A. Rundquist, Ph.D., Director
Motivation and Individual Differences Research Department

Approved by

E. I. Jones, Ph.D., Technical Director (Acting)
Karl E. Kuehner, Commander, USN
Commanding Officer

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Navy Training Research Laboratory
Naval Personnel and Training Research Laboratory
San Diego, California 92152

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SUMMARY AND CONCLUSION

Problem

In connection with a study of shipboard training aboard a submarine tender (AS) it was discovered that there was no standard method to train sound powered telephone talkers. This need was particularly apparent--and crucial--in the sound powered telephone talkers in Damage Control (DC) Central. This research was conducted to develop a method for the training of DC Central sound powered telephone talkers in particular and all sound powered telephone talkers in general.

Background and Requirements

The Navy Personnel and Training Research Laboratory (NPTRL) has had considerable success in designing classroom programmed instruction to develop aural/verbal skills in Navy officers. The AS under study had no qualified DC Central sound powered telephone talkers and the Damage Control Assistant (DCA) requested the writers to apply this kind of programming to the DC Central sound powered telephone talker training. This talker serves as the only direct link between the emergency area of the ship and the DCA, whose job it is to deal with the emergency. The present paper reports the result of this programmed instruction.

Approach

An audio program was developed by the writers and reviewed for accuracy by the AS DCA and his leading Chief Petty Officer. It was then administered to the appropriate enlisted men on the AS. Additionally, 60 nonrated enlisted men from the Navy Training Center (NTC), San Diego, were given the program at a shore station. Performance scores, biographical information, and opinion questionnaires were collected from the subjects.

Findings, Conclusions, Recommendations

The subjects all improved significantly from the programmed instruction. Those taking the program aboard ship were considered, without exception, to be qualified DC Central sound powered telephone talkers by the AS DCA. Student reaction to the program was overwhelmingly positive. It is concluded that audio programmed instruction is a valid and effective way of training aural/verbal skills on board ship.

1. The first primary recommendation is that audio programmed instruction be developed for training all sound powered telephone talkers aboard ship (p. 6).

2. The second primary recommendation is that sound powered telephone talker training should be done aboard ship, with a few exceptions; e.g., precommissioning details or during periods of shipboard availability (p. 6).

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ACKNOWLEDGEMENTS

The cooperation and assistance of CWO 2 E. L. Bishop and WO 1 R. T. Hutchins, the two Damage Control Assistants aboard the USS NEREUS (AS 17) during the conduct of this study is most appreciated, as is the cooperation of the Service School Command, San Diego (through its Educational Specialist, Mr. Dale Lovell) for furnishing 60 enlisted men for the study.

AN EXPERIMENTAL EVALUATION OF AN AUDIO TAPE LEARNING PROGRAM FOR SHIPBOARD DAMAGE CONTROL CENTRAL SOUND POWERED TELEPHONE TALKER PROCEDURES

A. Introduction and Background

While the senior author was studying the General Quarters training program aboard a submarine tender (AS), it became evident that a major weakness of that ship's damage control organization was the lack of trained Damage Control (DC) Central sound powered telephone talkers. The training officer and the Damage Control Assistant (DCA) of the AS requested the Navy Personnel and Training Research Laboratory (NPTRL) to investigate this weakness and attempt a solution.

Sound powered telephone talkers in Damage Control Central have the responsibility of receiving damage reports from various portions of the ship, logging them, and passing them on to the DCA, who then can manage the combating of that damage. To this end, the talkers must not only be thoroughly familiar with sound powered telephone procedures, but must also be thoroughly familiar with the DC Central message log sheet--a sheet with a predesignated symbology for reporting the type of damage which has occurred. An example of the DC Central message log sheet may be seen in Figure 1.

In order to train enlisted personnel in sound powered telephone procedures and logging damage reports for the DCA, a learning program was developed using the Audio Notebook,[1] a miniaturized, multitrack tape recorder which provides volume storage and selective playback for learning and practice of subject matter. A major advantage of the Audio Notebook is its capability for branching to and from the 22 15-minute channels on the tape. While the novice may listen to all material on every channel of the program, the experienced student can branch around certain basic information which he already knows. The time required for the experienced student to cover a certain topic can therefore be greatly reduced.

Audio learning programs have already been introduced in the COMTRAPAC CIC Watch Officer's Course (K-2G-351) with notable success in instructing naval officers in the use and monitoring of the radiotelephone (Curran & Brock, 1967) and the use of the Allied Naval Signal Book (Brock, 1970). Both programs were better than conventional instruction, particularly in terms of time saved.

At the time the research project on the AS began, there was no formal training of the DC Central sound powered telephone talkers. Since the

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[1] A product of Electronic Futures, Inc., North Haven, Connecticut.

NAME _____

TELE. CIRCUIT		
TIME —	TO	FROM
TIME	TO	FROM

COMP# _____ FR# _____

OVHD FWD

P S

DECK AFT

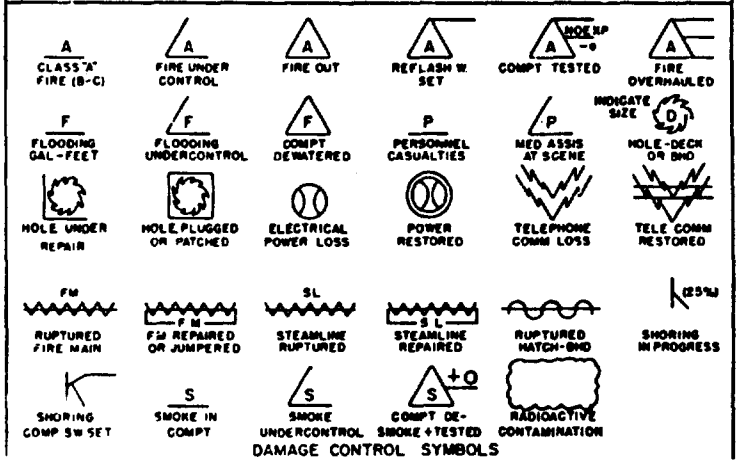

Figure 1. Typical Damage Control Message Log Sheet

talker has the primary task of getting all shipboard damage reports to the DCA, his proficiency was seen as crucial to the entire damage control organization. At the time the present study commenced there were no qualified DC Central sound powered telephone talkers aboard the AS. Two Audio Notebooks were used on the AS and students took the program under petty officer supervision. Six enlisted men were selected for qualification. Additionally, to obtain a larger sample, 60 enlisted men from the Navy Training Center (NTC) were administered the program at a shore based activity.

B. Procedures

1. Description of the Study

Shore based students were enlisted personnel who had completed basic training and were awaiting further training in their respective schools. None had previous experience as DC Central talkers and most were only superficially familiar with sound powered telephone procedures. A total of 60 students participated in this phase of the study. Three tests were administered to each student: (1) a sound powered telephone qualification test, consisting of ten questions covering basic sound powered telephone procedures; (2) a DC Central sound powered telephone talker pretest aimed at measuring ability to log messages received. This test consisted of 20 messages to be logged on the aforementioned log sheets; and (3) a DC Central sound powered telephone posttest, identical in form to the pretest. Biographical data were obtained with respect to experience as a sound powered telephone talker and/or DC Central talker. A student opinion questionnaire relating to the use of the Audio Notebook and the program was also collected.

2. Description of the Learning Program

The general outline of the learning program is given in Table 1. The ten channels of the program contain two distinct subprograms. Channels Two, Three, and Four deal with general sound powered telephone talker procedures. A talker in CIC could use these channels as well as a talker in DC Central. Channel Five contains the sound powered telephone qualification test. Channels Six through Ten are specific to the DC Central talker. The entire program covered approximately 1-3/4 hours of actual tape time. A key feature of the program allowed the student to record his answers to questions (Example: How do you reply to a sound powered telephone transmission?) and then to hear his answer and the correct answer on the tape. This comparison gave the student realistic and immediate feedback on his talking abilities.

TABLE 1

Outline of the Sound Powered Telephone DC Central Audio Notebook Learning Program

Channel	Subject	Maximum Track Time	Minimum Track Time	Remarks
1	Introduction to the Audio Notebook	8'55"	8'55"	Covers principles and use of the Audio Notebook.
2	Sound powered phone	8'40"	8'40"	Introduction to sound powered phone procedures. Seven question quiz, student records his answers.
3	Quiz answers and Phonetic Alphabet	14'05"	9'15"	Student hears his answers and correct answers to questions on Channel 2. Student may omit the section on the phonetic alphabet and Channel 4 if all questions were answered correctly.
4	Review of talker rules	4'40"	0'00"	Covers pronounciation of numerals, SPP rules and procedures.
5	Sound powered phone qualification test	3'55"	3'55"	Ten question qualification test graded by supervising Petty Officer.
6	DC Central pre-test	13'45"	13'45"	On DC Central message log sheets, student logs 20 messages typical of those received in DC Central.
7	Damage Control talker	13'30"	5'45"	Basic information on DC Central talker responsibilities. Channel contains a five question quiz and answers. Students answering all questions correctly go to Channel 8. Students missing questions remain on Channel 7 for instruction on how to log messages correctly.
8	DC Central drill	14'20"	14'20"	Contains 15 messages which student must log. Initial 7 are repeated twice; remainder gradually increase in speed and are given only once. Student may replay messages if necessary.
9	DC Central drill	9'10"	9'10"	Contains 15 messages which student must log. All messages are given once and at normal speed. Student may replay messages if necessary.
10	DC Central Post-test	12'00"	12'00"	Contains 20 messages which are given once at normal speed. Student may not replay messages. Program ends.

C. Results

For the sound powered telephone qualification test, an arbitrary passing score of 70% was set. Table 2 shows the pass/fail rate for both the shore based and AS students. Ninety-five percent of the shore based students passed the test, 100% of the shipboard group.

TABLE 2

Sound Powered Telephone Qualification Test: Pass/Fail Rate

		Shore Based	Shipboard	Total
Pass	n	57	6	63
	%	95	100	
Fail	n	3	0	3
	%	5	0	

Table 3 shows the means and standard deviations for the DC Central pre- and posttests for the shore based students. As can be seen, improvement was marked and statistically significant.[2] Table 4 shows the mean and standard deviation for the shipboard group's posttest scores.

TABLE 3

Pre- Versus Posttest Scores--Shore Based Students

	DC Central Pretest	DC Central Posttest	Difference
Mean	5.59	14.0	8.41 ($p < .001$)
Standard Deviation	5.65	4.63	

[2]The test performed was a one-tailed t for correlated means.

TABLE 4

Posttest Scores--Shipboard Students

Mean Posttest Score	Standard Deviation	% Qualifying*
15.92	1.12	100

*Score of 2.50 or better on a 4.0 scale.

Although pretest scores were not obtained, the students reported major improvement and the AS DCA considered that all students went from unqualified to qualified status. The markedly low standard deviation of the shipboard students (1.12) while due partly to a small n, suggests that these students may be both more uniformly motivated and more aware of the context of the training, i.e., they've seen DC Central in operation. In fact, they were administered the program in DC Central.

Table 5 supports this latter hypothesis. While the majority in both groups liked the audio programming, most of the shore based students found the program "difficult" or "difficult in part." Again, this suggests that the shipboard training-in-context has an advantage over the traditional classroom setting.

The writer's believe that even with 100% of the shipboard group qualifying as DC Central talkers, a higher level of performance could be obtained. More practice will probably result in such an increase. However, there was some tentative evidence in the study to suggest that the symbology used on the log sheets is more abstract than necessary. Research is suggested to determine whether revising the log sheet symbology results in a higher degree of proficiency in logging DC Central messages in a shorter time.

TABLE 5

Student Opinion Questionnaire Results (Shipboard and Shore Based)

		YES		NO		QUALIFIED*		TOTAL	
		Shipboard	Shore	Shipboard	Shore	Shipboard	Shore	Shipboard	Shore
Do you like the Audio Notebook?	%	100	91.67	0	5.0	0	3.33	100	100
	n	6	55	0	3	0	2	6	60
Did you find the program difficult?	%	0	23.33	100	46.67	0	30.00	100	100
	n	0	14	6	28	0	18	6	60
Do you feel you are a qualified talker for DC Central?	%	33.33	20.0	33.33	66.67	33.33	13.33	100	100
	n	2	12	2	40	2	8	6	60

*No answer, not sure, don't know, at first, in parts, etc.

D. Conclusions and Recommendations

The findings of this research, added to previous NPTRL studies, indicate that the audio programmed instruction is a good vehicle for training in aural and talking skills.

It is recommended that.

(1) Audio programmed instruction be used for all sound powered telephone talker training aboard ship.

(2) Sound powered telephone talker training be done primarily aboard ship using this method. Exceptions would concern such things as precommissioning details, or shipyard availability periods.

(3) Investigation be made to determine whether revising the DC log sheet symbology results in a higher degree of proficiency in logging DC Central messages.

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NAVPERS 14005-A. Sound powered telephone talkers manual.

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13. ABSTRACT

This research evaluates aural programmed instruction for Damage Control (DC) Central sound powered telephone talkers as a means of promoting adaption to student differences in the shipboard environment. The DC Central sound powered telephone talker is the only link between a shipboard emergency and the Damage Control Assistant (DCA), who must deal with the emergency. There were no qualified DC Control talkers on the vessel under study when this research began. All students on the ship qualified using the program. Additionally, 60 students fresh from recruit training received the program; their improvement was statistically significant. It is recommended that all sound powered telephone talker training be done aboard ship using aural/verbal programmed instruction.

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Aural/verbal training						
Damage Control Central						
Programmed Instruction						
Shipboard Training						
Sound Powered Telephone Talkers						